A

A   ◊ AMPS.

A to D   ◊ ANALOG TO DIGITAL CONVERTER.

Abbreviated addressing   a technique for shortening the direct address by using only part of the full memory address. This results in a quicker way of processing data since the truncated address is decoded by the computer's central processing unit in less time than the full address would require.

Abort   to spontaneously halt the execution of a computer program. To cancel an operation partway through after evaluating initial results.

Absolute address   a specific fixed location of discrete data in storage; an address that the control unit can interpret directly. The label assigned by a programmer to a particular storage area in a computer. Code that identifies a unique storage location or device. (Synonymous with MACHINE ADDRESS.)

Absolute assembler   a unique type of ASSEMBLY LANGUAGE program created to produce binary programs containing ABSOLUTE ADDRESSES and address references only.

Absolute code   a code using ABSOLUTE ADDRESSES and absolute operation codes. A code that indicates the exact location where the data concerned is to be found or stored.

Absolute loader   a program which places programs and data in ABSOLUTE ADDRESS format into memory.

Absolute value   the value of a number ignoring any qualifying plus or minus prefix, e.g. the absolute value of -1 is 1.

Absolute zero   taken from the fundamental, or absolute scale of temperature. This scale is based on the Second Law of Thermodynamics, as applied to a theoretical 'perfect' gas. In this scale 'absolute zero' corresponds to $-273°C$.

AC or ac   ◊ ALTERNATING CURRENT.

Access   the process of gaining entry. For example, to access a record, its device, location and specific address need to be obtained before the computer can gain entry to that precise area of storage containing the data required.

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Access time   the time taken from when data is requested from a storage unit to its delivery. The time from when that data is presented for storage until the data is stored. A value often used for comparison between different computer systems.

Accounting machine   mechanical or electro-mechanical devices which were largely used for basic arithmetic functions. As a result they were widely used for commercial or accounting purposes. They have now largely been replaced by calculators or microcomputers.

Accumulator   one or more registers associated with the ARITH-METIC LOGIC UNIT which are used as temporary storage areas for data and for results of the computer's central processing operations.

Accuracy   specific to a TRANSDUCER or SENSOR. The ratio of error to total output, expressed as a percentage.

Acoustic coupler   a device which converts voice signals to digital signals. Used to transmit data along voice telephone lines using a normal telephone handset as the input device for a computer system.

Acquisition   ⬦DATA ACQUISITION.

Acronym   when applied in the computing sense it refers to the formation of an English language word from a selection of the initial letters of a phrase it is designed to represent. It is used to abbreviate long, clumsy or tongue twisting terms, e.g. COBOL, COmmercial and Business Oriented Language.

Active element   an element in its excited or active state or a file, record or routine which is being used by the processing unit. More typically applied to electronic devices, e.g. transistors, or Cathode Ray Tubes.

Actuator   a device used to convert electrical energy into mechanical energy; an output TRANSDUCER. When energy is to be directed in a straight line it can be called a 'linear actuator'.

Adapter   a connecting device for parts that would not otherwise fit together, usually a standard plug or connector.

Address   a coded instruction specifying the location of data or program words in storage. An address may refer to storage in registers or memory or both. An address code itself may be stored so that a memory location may contain an address of data rather than the data itself. This technique is known as 'indirect addressing'.

Address bus   parallel connections (hardware circuits) used to carry binary addresses from the CENTRAL PROCESSING UNIT to memory.

Address field   that part of a computer word that contains either the address of the data or instruction, or the information necessary to locate an address.

Address register   a BYTE (8 bit) or word (generally 16 bit) used for temporary storage of an address transmitted during an input/output cycle. The register is used by the computer itself and is normally not available to the programmer.

Addressing, common data bus   on some systems referred to as MEMORY MAPPED I/O ADDRESSING. Instructions and data contained in or required by a program are stored into and loaded from specific memory locations, the ACCUMULATOR, or selected registers. Because some microprocessors' memories (read/write and read-only) and peripherals are on a common DATA BUS, any instruction used to address memory may be used to address peripheral devices.

Addressing mode   the means by which a program can find a specific memory location. There are numerous methods by which memory can be addressed. The more sophisticated the method of addressing memory, the faster and more economic will be the program execution.

    One of the main differences between microcomputer systems is in the wide range of addressing methods available. Typical techniques include: sequential forward and backward, indexed, indexed sequential (indirect), 16 bit word-addressing, 8 bit byte addressing and stack addressing.

ADP   Automatic Data Processing, synonymous with EDP (Electronic Data Processing) and DP (Data Processing). The generic term for the computing process.

Agent   an independent salesman or sales organisation which sells a supplier's products for a commission, or a discount. Does not hold stock of the product. Normally offers very limited support.

ALGOL   an abbreviation for ALGOrithmic Language. Like FORTRAN a high level computer language specially suited to mathematic and scientific problems.

Algorithm   a clearly-specified set of rules defining a finite number of operations required to solve a particular problem.

Alignment pin   the pin or device that ensures correct connection of two components to be connected.

Allocate   to assign main software routines and subroutines to storage. Carried out in the coding or software definition phase of programming and then looked after by the computer's operating system.

Alphanumeric   information containing a combination of alphabetic characters and numbers.

Alternating Current (AC or ac)   an electric current which flows in positive and negative cycles. The measure of the current is its algebraic average. The cycles per second are referred to as Hertz (Hz).

ALU   ◊ARITHMETIC LOGIC UNIT.

Ambient, ambient conditions   the conditions of the surrounding environment. Refers to temperature, light, noise, atmospheric pressure, etc. A computer system or an electronic device is designed for a particular set of ambient conditions, within a given tolerance. If the ambient conditions fall outside the specified tolerance compensation must be made in the form of insulation, air conditioning, etc.

American National Standards Institute   ◊ANSI.

American Standard Code for Information Interchange   ◊ ASCII.

Amplifier   a device used to intensify or increase an electrical signal. There are numerous types producing either linear or non-linear resultant outputs.

Amplitude   normally used to describe the peak value of a sine wave form. In the electronics sense it refers to the peak values (positive and negative) of an alternating current.

Amps (A)   an abbreviation for Ampère, it defines the measure of the constant current flowing in a circuit.

Analog(ue)   a system in which the output signal bears a continuous relationship to the input signal, as opposed to the discontinuous, or discrete signals, used by DIGITAL circuits. The term is usually spelled 'analog'. A typically 'analogy' of the differences between analog and digital techniques is illustrated by the immediate differences between an analog watch and a digital watch. A slide rule is a type of analog computer.

Analog computer   a computer that operates on voltage levels rather than digital values.

Analog to Digital converter (A to D)   a device which samples an analog signal and converts the observed value to a BINARY number for use by a digital circuit.

Analyst/Systems Analyst   the computer professional whose job is to convert a problem into a format so that it can be converted into computer programs by a programmer.

Analytical engine   Charles Babbage's design for a mechanical computing machine which embodied all of the main principles implemented in modern computers, with the exception of the stored program.

AND gate   a discrete component used in logic circuits which requires two input signals to generate one output signal. A Boolean logic operator. See appendix for LOGIC CIRCUITS.

ANSI   American National Standards Institute: formerly American Standards Association (ASA), and, prior to that, United States of America Standards Institute (USASI). This organisation convenes committees from suppliers, users and other interested bodies to provide standards for the computer industry, e.g. ANSI COBOL.

APL   an acronym for A Programming Language. A high level and efficient language developed by Dr Kenneth Iverson of IBM. It has been used almost exclusively by timesharing systems so far, but there are indications that it may find a use in microcomputer systems.

Application   the specific task to which a computer or program is dedicated, e.g. payroll, sales ledger, etc.

Applications program   a program that does actual problem solving. More usually this is a suite of programs, applied for users' problem solving, e.g. payroll, ledgers, stock control, etc.

Architecture   a general term used to describe the philosophy of the construction of specific computer systems or software products.

Archive   historical data, usually contained on tapes or disks but may be in other media.

Arithmetic Logic Unit (ALU)   the arithmetic logic unit is one of the three essential components of a microprocessor (the other two being the REGISTERS and CONTROL BLOCK). The ALU is contained in

the computer's central processing unit and carries out arithmetic and BOOLEAN logic operations on data presented in a BINARY form.

Arithmetic registers   those on which arithmetic and logic functions can be performed; the register can be a source or destination of OPERANDS for the operation.

Array   a matrix or two dimensional grid used to indicate a collection of memory locations, or a description of inputs and outputs on, for example a PRINTED CIRCUIT BOARD.

Artificial intelligence   a type of program that allows a computer to operate certain functions on its own. For example, learning adaptation, simple reasoning, improvement and optimising. (Synonymous with CYBERNETICS.)

Artwork   the preparatory design work for a PRINTED CIRCUIT BOARD. It refers specifically to the film-based design which is then used in subsequent etching processes before the printed circuit board is produced.

ASA   American Standards Association. ◊ ANSI.

ASCII   American Standard Code for Information Interchange: standard binary notation for numbers, letters and control characters. See appendix for CODES.

Assembler   software programs which translate instructions written in assembly codes (e.g. mnemonics, or SOURCE CODE) into MACHINE LANGUAGE instructions (OBJECT CODES) which can be directly loaded into a computer and recognised by the machine's central processing unit.

Assembly language   a machine-oriented language, used for writing the SOURCE CODE programs. The program is written as a series of source statements using mnemonic (or symbolic) codes that suggest the definition of the instruction. The symbolic codes must be translated by the assembler program into object (or machine) code before it can be used by the computer.

Assembly listing   a printed list produced by the ASSEMBLER to document an assembly operation. It shows, line for line, how the assembler translated the assembly language program.

Associative storage   a computer memory in which storage locations are identified by their contents, not by names or positions.

Asynchronous   a mode of operation in which events are started by the completion of another event, not by a clock.

Attenuation   the reduction or loss of signal in passing along a circuit, due to resistance, leakages, etc.

Automatic Data Processing   ◊ ADP.

Automatic loader   a loader program contained in a special ROM that allows loading of BINARY paper tapes into the first record or sector of a mass storage device.

Auxiliary storage   a peripheral storage device additional to the main memory of a computer, e.g. paper tape, magnetic tapes, disk or magnetic drum. Auxiliary storage holds much larger amounts of information than main memory, and takes a longer time to access. This type of storage can be known as on-line storage or backing storage.